IMENTATION PAGE

Form Approved OMB No. 0704-0188

1a. [illegible] Unclassified	1b. RESTRICTIVE MARKINGS None
2a. SECURITY CLASSIFICATION AUTHORITY N/A	3. DISTRIBUTION/AVAILABILITY OF REPORT Distribution A. Unlimited.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE N/A	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) DODPOPHMTR/AYD 92-006	5. MONITORING ORGANIZATION REPORT NUMBER(S) None
6a. NAME OF PERFORMING ORGANIZATION Packaging Division	6b. OFFICE SYMBOL (If applicable) SMCAR-AEP
	7a. NAME OF MONITORING ORGANIZATION None
6c. ADDRESS (City, State, and ZIP Code) U.S. Army Armament Research, Development and Engineering Center, Picatinny Arsenal, NJ 07806-5000	7b. ADDRESS (City, State, and ZIP Code) None
8a. NAME OF FUNDING/SPONSORING ORGANIZATION Same as 6a	8b. OFFICE SYMBOL (If applicable) SMCAR-AEP
	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State, and ZIP Code) Same as 6c	10. SOURCE OF FUNDING NUMBERS

PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.	WORK UNIT ACCESSION NO.

11. TITLE (Include Security Classification)
Performance Oriented Packaging (POP) Test of Wirebound Box, Part Number 12590218 for Small Caliber Ammunition Packed in PA108 Metal Containers

12. PERSONAL AUTHOR(S)
Edgardo B. Silvestre

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Final	FROM _____ TO _____	920709	

16. SUPPLEMENTARY NOTATION

17. COSATI CODES		
FIELD	GROUP	SUB-GROUP

18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
1. Performance Oriented Packaging
2. Ammunition Packaging
3. PA108 Container
4. Wirebound Box
5. Packaging

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This report covers the POP testing of wirebound box, part number 12590218, used as shipping container for small caliber ammunition. Method of packing is consistent with drawing 12590217. The exterior wirebound box contains two PA108 metal inner containers (Dwg 9396178) containing various 5.56mm ammunition items for the Squad Automatic Weapon. Tests were conducted using containers containing additional weights to insure that tested weight is higher than heaviest pack to insure safe shipment.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION
☐ UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT. ☐ DTIC USERS	Unclassified

22a. NAME OF RESPONSIBLE INDIVIDUAL	22b. TELEPHONE (Include Area Code)	22c. OFFICE SYMBOL
Edgardo B. Silvestre	(201) 724-2173	SMCAR-AEP

DD Form 1473, JUN 86 Previous editions are obsolete. SECURITY CLASSIFICATION OF THIS PAGE

Unclassified

DODPOPHMTR/AYD 92-006

PERFORMANCE ORIENTED PACKAGING TESTING

OF

WIREBOUND BOX FOR SMALL CALIBER AMMUNITION PACKED IN PA108 METAL CONTAINER

FOR

PACKING GROUP II
SOLID HAZARDOUS MATERIALS

Author:

EDGARDO B. SILVESTRE
PACKAGING TECHNOLOGIST

Performing Activity

SMCAR-AEP
U.S. Army Armament Research, Development and Engineering Center
Picatinny Arsenal, New Jersey 07806-5000

July 1992

FINAL

PREPARED BY:

Edgardo B. Silvestre

Edgardo B. Silvestre
Packaging Technologist

REVIEWED BY:

James F. Zoll
Project Leader

REVIEWED BY:

Vishwa Khanna
Supervisory Mechanical Engineer

APPROVED BY:

Robert J. Kuper
Chief, Packaging Division

INTRODUCTION

The Department of Transportation (DOT) per CFR 49, Parts 100-179, dated 1 Oct 91, requires that hazardous materials should be packed in a container that passes the Performance Oriented Packaging (POP) tests.

The wirebound box, part no. 12590218, is used as the shipping container for 5.56mm small caliber ammunition. This box contains two (2) PA108 metal containers containing 5.56mm small arms ammunition for the Squad Automatic Weapon.

POP tests were conducted using containers containing additional weights to insure that the tested weight is higher than the heaviest pack. The tests were conducted in accordance with the referenced sections of CFR 49 and are valid only when ammunition are packed in the PA108 container for the DOD.

TEST PERFORMED

1. Drop Test

Section 178.603 of CFR 49 specifies that one box each should be used for each drop orientation. Five (5) boxes were used for five different orientations.

One box each were dropped from a height of 1.2 meters (3.9 ft) in the following orientations: flat on bottom, flat on top, flat on long-side, flat on short-side, and on a corner.

2. Vibration Test

Three (3) boxes were placed on the vibrating platform and vibrated for a duration of one hour. The boxes were unrestrained except horizontally to prevent it from falling off of the platform. The peak-to-peak displacement was one inch and the frequency was 300 rpm. This frequency was sufficient enough to allow the package to become completely airborne, enabling a 1/16 inch (.16 cm) thick piece of strapping material to be slid underneath the package during testing.

3. Stacking Test

Section 178.606 of CFR 49 requires that the minimum height of the stack including the test sample must be 3.0 meters (10 ft). Three test samples are required.

A 3.0 meter stack height of samples is equivalent to 1820 lbs. (827 kg) of stack weight. Three different test samples were each subjected to a stack weight of 1820 lbs for a period of 24 hours. The samples then were inspected and examined for any damage and distortion.

PASS/FAIL (DOT CRITERIA)

A package for explosives is considered to successfully pass the drop tests if for each sample tested, no rupture of the packaging occurs.

A packaging passes the vibration test if there is no rupture or leakage from any of the packages.

A test sample passes the stacking test when no test sample leaks. No test sample may show any deterioration which could adversely affect transportation safety or any distortion likely to reduce its strength or cause instability in stacks of packages.

TEST RESULTS

1. Drop Test - Result: Pass - no spillage.

The first four drops did not do any damage on any of the four boxes. On the corner drop, one of the long-side of the box cracked but there was no spillage.

2. Vibration Test - Result: Pass - no spillage or damage.

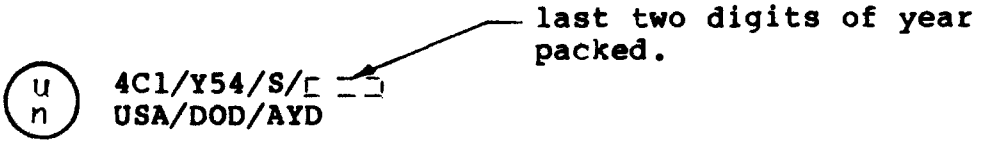
All three boxes were removed from the platform after one hour vibration. Each of the boxes was turned on its side and inspected for any damage and leakage. The packages were all tightly intact and showed no evidence of deterioration.

3. Stacking Test - Result: Pass - no evidence of distortion.

The stacking test was performed with the use of a forklift to apply a dead load of 1820 pounds on top of each of the three packages. Each of the packages adequately supported the applied load. No evidence of package distortion was noted.

REMARK

Based on the successful POP testing outlined in this report, the following POP symbol shall be applied to containers manufactured in accordance with drawing 12590218 when used to package the NSN's listed in Table A.



REFERENCE MATERIAL

1. Federal Register, "49 CFR Part 107, 1 Oct 91"
2. Federal Specification PPP-B-585

TEST DATA

DATA:

Container (Outer):

Type: Box, wirebound
Part No.: 12590218
UN Code: 4C1
Spec No.: PPP-B-585
Material: Wood
Capacity: 28.0 liters
Dimensions:

Inside: 37.47 cm x 32.70 cm x 22.86 cm
(14 3/4 in x 12 7/8 in x 9 in)

Outside: 43.18 cm x 33.97 cm x 23.81 cm
(17 in x 13 3/8 in x 9 3/8 in)

Weight: 2.7 kg (6.0 lbs)

Container (Inner):

Type: Box
Model No.: PA108
Spec No.: MIL-C-70628
Material: Metal
Capacity: 10.8 liters
Dimensions:

Inside: 30.16 cm x 17.15 cm x 20.84 cm
(11 7/8 in x 6 3/4 in x 8 13/64)

Outside: 32.78 cm x 18.53 cm x 22.62 cm
(12 29/32 in x 7 19/64 in x 8 29/32 in)

Weight: 3.0 kg (6.5 lbs)
Closure (Method/Type): Hinged Lid

PRODUCT(S):

Identification No.: See Table A
UN Packing Group: II
Physical State: Solid
Amount per Container: See Table A

TEST MATERIALS:

Name: Simulated Weights and Sand
Physical State: Solid
Size: 10 in (L) x 3 in (W) x 3 in (H)
or 2 in dia x 7/8 in thick
or granulated sand
Quantity: Twelve (12) lead weights
or lead tablets
or 140 lbs
Dunnage: Polyethylene foam per PPP-C-1752
Gross Weight: 154 lbs (70 kg)

TABLE A

DODIC OR NALC	NSN	HM ITEM	TYPE	HAZARD CLASS	UN NO.	#/CNTR	WT KG
A064	1305-01-252-0153	5.56MM	Ball Tracer	1.4S	0012	1600	34
A062	1305-01-258-8692	5.56MM	Ball	1.4S	0012	1600	34
A075	1305-01-258-8694	5.56MM	Blank	1.4S	0014	1600	26

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